**%program to detect edges in an image using 3x3 mask without builtin function**

clc;

clear all;

close all;

I=(imread('butterfly.jpg'));

a=rgb2gray(I);

figure,imshow(a),title('original image');

I=double(a);

In=I;

mask1=[1, 0, -1;1, 0, -1;1, 0, -1];

mask2=[1, 1, 1;0, 0, 0;-1, -1, -1];

mask3=[0, -1, -1;1, 0, -1;1, 1, 0];

mask4=[1, 1, 0;1, 0, -1;0, -1, -1];

mask1=flipud(mask1);

mask1=fliplr(mask1);

mask2=flipud(mask2);

mask2=fliplr(mask2);

mask3=flipud(mask3);

mask3=fliplr(mask3);

mask4=flipud(mask4);

mask4=fliplr(mask4);

for i=2:size(I, 1)-1

for j=2:size(I, 2)-1

neighbour\_matrix1=mask1.\*In(i-1:i+1, j-1:j+1);

avg\_value1=sum(neighbour\_matrix1(:));

neighbour\_matrix2=mask2.\*In(i-1:i+1, j-1:j+1);

avg\_value2=sum(neighbour\_matrix2(:));

neighbour\_matrix3=mask3.\*In(i-1:i+1, j-1:j+1);

avg\_value3=sum(neighbour\_matrix3(:));

neighbour\_matrix4=mask4.\*In(i-1:i+1, j-1:j+1);

avg\_value4=sum(neighbour\_matrix4(:));

%using max function for detection of final edges

I(i, j)=max([avg\_value1, avg\_value2, avg\_value3, avg\_value4]);

end

end

figure, imshow(uint8(I));

**%program to detect edges in an image using matlab builtin function**

clc;

clear all;

close all;

b = imread('coins.png');

% b = rgb2gray(a);

subplot(2,2,1);

imshow(b);

title('Original Image');

c1 = edge(b,'sobel');

subplot(2,2,2);

imshow(c1);

title('Sobel Operator');

c2 = edge(b,'prewitt');

subplot(2,2,3);

imshow(c2);

title('Prewitt Operator');

c3 = edge(b,'roberts');

subplot(2,2,4);

imshow(c3);

title('Roberts Operator');